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NEED FOR ACHIEVEMENT, NEED FOR AFFILIATION  
AND THE ADJUSTMENT OF HIGH SCHOOL STUDENTS

By  
Joy E. Green

A Thesis  
Submitted to the Faculty of Graduate Studies  
through the Department of Psychology  
in Partial Fulfillment of the  
Requirements for the Degree  
of Master of Arts at the  
University of Windsor

Windsor, Ontario, Canada

1973

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## ABSTRACT

The purpose of this study was to investigate how nAch and nAff, and, in particular, the interaction between these two needs, affect the academic and personal adjustment of high school students.

A review of the literature revealed some evidence of a conflict between nAch and nAff under environmental conditions which force a person to choose between satisfying his achievement needs and satisfying his affiliation needs. It was suggested that this conflict between nAch and nAff would affect the performance and the personal adjustment of individuals in the school situation. Thus, it was predicted that students who are high in both nAch and nAff receive lower grades and display poorer personal adjustment than students who are high in nAch and low in nAff.

Male and female subjects from the eleventh grade of a co-educational school were administered a four-part questionnaire. On the basis of their responses on the Personality Research Form nAch and nAff scales, subjects were separated by sex into High nAch High nAff, High nAch Low nAff, Low nAch High nAff, and Low nAch Low nAff groups. Analyses of variance were used to assess the effects of sex, nAch, and nAff on measures of school performance and personal adjustment.

The results revealed that for male and female groups separately and combined, students in the High nAch Low nAff group obtained significantly higher overall averages than students in the High nAch High nAff group, although there were no differences in the amount of time subjects reportedly spent studying. There were no differences between the High nAch

High nAff and High nAch Low nAff groups on three self-report measures of personal adjustment. However, males in the High nAch Low nAff group felt significantly more socially inadequate than males in the High nAch High nAff group.

It was concluded that there is a conflict between nAch and nAff for both males and females in the school situation, and that this conflict interferes with the academic performance of students who are high in both needs. Several explanations were offered for the effect of the conflict between nAch and nAff on the academic adjustment of students who are high in both needs, and suggestions for further research were proposed.



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## CHAPTER I: INTRODUCTION

### Introduction to the Topic and Goals of the Study

The affiliation needs of a person relate to his desire to make friends and to spend time and do things with others, while his achievement needs refer to the desire to perform competently and to be skillful and successful. The North American education system, at all levels, provides, to varying degrees, the means for students to satisfy these two general types of need. Intellectual achievement goals may be reached through academic pursuits, while social goals may be attained through interpersonal relations and recognition from peer group members.

A number of writers (e.g., Cronbach, 1963; Lindgren, 1967) have suggested that there is a fundamental conflict within our culture between the "achievement ethic" and the "affiliation ethic." Murray (1938), in his comprehensive study of human needs and their importance to the understanding of personality, suggested that the need for achievement (nAch) would conflict with several other needs, including the need for affiliation (nAff). Horner (1968) has hypothesized that a conflict of these needs may occur in individuals high in nAff and nAch under competitive conditions.

A conflict between nAch and nAff, although relevant to the understanding of behaviour in many situations, is likely to be most powerfully felt in the education system. Kahl (1953) found that inter-individual conflicts occur in the school situation. According to Kahl (1953), affiliation-oriented children reject the hard workers, saying "they don't know how to have any fun (p. 197)," and achievement-oriented pupils say in turn that the others are "irresponsible, and don't know what is good for them (p. 197)."

Lindgren (1967) suggests that "nAch is not likely to be very strong when nAff dominates the student's motivation (p. 554)." Cronbach (1963), on the basis of his thesis that the "affiliation ethic"<sup>1</sup> detracts from and will ultimately be very detrimental to achievement-oriented behaviour, suggests that:

Professional educators should therefore pull against the current other-directedness, aiming to fire the enthusiasm of individual children and to instill these values which serve community progress. (p. 51).<sup>2</sup>

Until recently, educators, in accordance with the almost exclusively achievement-oriented culture in which they functioned, assumed that the social needs of students could be ignored and even completely discouraged in favour of inner-directed, solitary achievement values. But what of the affiliation needs of an individual? The place of nAff in the total personality configuration of the individual and, indeed, the importance of human interaction to personal adjustment can hardly be so insignificant as to be all but ignored in the education process. Current trends in education seem to reflect the view that nAch and nAff need not be conflictual. In a society which is trying to cope with changing social values and attempting to understand the problems of human relations, educators are experimenting with open classrooms where children are encouraged to interact with one another.

---

<sup>1</sup>Cronbach (1963) includes in his definition of the "affiliation ethic" the philosophy of accepting impulses and taking present pleasure without concern for the future, as well as that of acting on the basis of group standards and group interdependence rather than individual values and responsibility.

<sup>2</sup>Cronbach (1963) does suggest that affiliative behaviour is important; his comment reflects the fear that achievement values will be discarded in favour of overreliance on affiliative values as a philosophy of life.

The relation of nAff to nAch is not likely to be a simple one. In attempting to understand the complex interaction of these two needs, several considerations are relevant. For example, the importance of sex differences in nAff and nAch and in the relationship between these needs and actual achievement must be considered. Research generally indicates that girls are higher than boys in nAff and that this need is positively correlated with the academic performance of girls, but not boys. One must also be aware of the special concerns of adolescence as they affect the interaction between nAch and nAff. Adolescence is often a time when an individual feels very much alone, when feelings of social inadequacy constitute an acute problem, and when peer support becomes very important. According to Erikson's (1959) psycho-social theory of human development, adolescence is a time when the achievement crisis has likely been resolved, and resolution of the crisis of intimacy versus isolation becomes crucial to the development of ego-identity. In support of Erikson's view, Bauer (1970) has found that post-adolescent subjects with high motivation in both achievement and affiliation manifest a more satisfactory ego-identity than subjects who are high in only one of these needs. Can this be so if these two needs are necessarily conflictual? Are these students better adjusted than other groups of students?

Initial exploration of the effect of the interaction between nAch and nAff on academic performance at the university level suggests that students who are high in nAch and low in nAff obtain higher grades than students high in both nAch and nAff, even though the latter group of students reportedly spend more hours per week studying.<sup>3</sup>

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<sup>3</sup> Exploratory studies were conducted by F. Schneider, University of Windsor, with students in undergraduate psychology courses. The studies were not adequately controlled and conclusions were based on small samples.

The purpose of this research was to investigate how nAch and nAff, and, in particular, the interaction between these two needs, affect the academic and personal adjustment of high school age subjects.

### Need for Achievement

#### Definition of Need for Achievement

Murray (1938) introduced the term "need achievement" into the psychological literature. He defined nAch as:

The desire or tendency to do things rapidly and/or as well as possible. To accomplish something difficult. To master, manipulate or organize physical objects, human beings or ideas. To do things as rapidly and as independently as possible. To excel one's self. To rival and surpass others. To increase self-regard by the successful exercise of talent (p. 164).

The many different measures of nAch that have been developed since the work of Murray have been, for the most part, derived from his description. McClelland (1953), a prolific researcher in the area, considers the central aspect of nAch to be a person's orientation toward excelling some standard of excellence.

#### Measurement of Need for Achievement

Because nAch is often considered among the major needs of the individual, it is not surprising that a number of different ways have been devised to measure it. The early research by McClelland and his associates (McClelland et al., 1953) emphasized the measurement of achievement motivation by projective methods in which the subject is shown a series of TAT and/or similar pictures and asked to compose a story in response to each picture. The stories are scored using criteria developed by McClelland et al. (1953). The subject is given an achievement score based on the number of achievement themes in the stories. Evidence indicates that the two most commonly used



projective measures, the TAT and the French Test of Insight (McClelland et al., 1953) appear to measure the same variable.

The other major method of measurement of nAch involves the use of paper and pencil self-report scales. Generally the nAch scale represents one of several scales in a personality inventory designed to measure what are thought to be major personality needs. Commonly used personality tests which include a nAch scale are the Edwards Personal Preference (EPPS) and the California Personality Inventory (CPI). A more recently developed measure of nAch, which has been used successfully in a number of studies, is the nAch scale of Jackson's (1967) Personality Research Form (PRF). These non-projective personality measures tend to show significant positive correlations with each other. In fact, a good correlation with one or more existing measures has typically formed a validity criterion during test construction.

Although the projective and non-projective measures of nAch purport to measure the same construct, several researchers (Acker, 1968; Bendig, 1957; Koenigsberg, 1962; Melikian, 1958) report extremely low correlations between the two ( $-.05$  to  $+.11$ ). In fact, some researchers (e.g., Butler, 1968; Koenigsberg, 1962; Kuhlen & Dipboye, 1959; Secord & Backman, 1968) have suggested that the projective measures tap a different aspect of nAch than what is measured by the non-projective tests. Kuhlen and Dipboye (1959), for example, suggest that the TAT primarily measures competitiveness with people, while the EPPS appears to measure an orientation toward things and problems and mastery over them. In addition, Secord and Backman (1968) contend that projective devices apparently measure achievement fantasies that often have little relation to actual behaviour, and Butler (1968) suggests that the TAT measure may be partly a measure of anxiety.

### Relationship between Need for Achievement and Actual Achievement.

The study of the correlates of achievement motivation has received substantial attention from psychologists. According to McClelland (1951), on the basis of the degree of achievement motivation expressed by an individual, one can make inferences "as to the extent to which the person's behaviour is guided by anticipated or past achievement satisfactions or dissatisfactions...(p. 585)." Thus, with a good measure of achievement motivation, we should be able to predict academic achievement and other types of actual achievement.

Projective measures of need for achievement. Studies attempting to correlate various measures of achievement with projective measures of nAch have yielded inconsistent results. McClelland et al. (1953) found a positive correlation between nAch and the number of simple addition problems or anagrams completed in a given period of time. He also reported a correlation of .50 between nAch and course grades in a sample of 30 college students. However, in later studies with larger samples of subjects, the McClelland measure generally has not fared so well. For instance, Bendig (1958) and Hurley (1955) found correlations of only .10 and .02, respectively, between nAch and grades obtained in college courses. Secord and Backman (1968), on the basis of their survey of the literature, report that only half of the studies surveyed yielded a significant positive association between nAch and academic performance.<sup>4</sup> Some studies even report a negative correlation (e.g., Cole et al., 1962).

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<sup>4</sup> This writer also found that only approximately half of the studies reported significant positive correlations.

Non-projective measures of need for achievement. Non-projective measures of nAch typically have shown more consistent correlations with educational achievement than projective measures. Although there are some studies which report positive but non-significant correlations (e.g., Hart, 1967), the majority of studies obtained significant positive correlations between various self-report nAch scales and achievement on laboratory tasks (Pestruke, 1969) and in school (e.g., Acker, 1968; Ollendick, 1971; Patros, 1970). Furthermore, Acker (1968) found that the PRF measure of nAch was superior to the TAT measure in predicting academic performance. Mitchell (1961) obtained similar results in a study which compared eight different measures of nAch. Ollendick (1971) presents evidence that nAch is a reliable predictor of persistence behaviour as well as general academic performance.

#### Need for Affiliation

The concept of nAff was defined by Murray (1938) as follows:

To draw near and enjoyably co-operate or reciprocate with an allied O; an O who resembles to S or who likes the S. To please and win affection of a cathected O. To adhere and remain loyal to a friend (p. 174).

Current measures are based on a somewhat modified form of Murray's original definition. For example, Jackson (1967), in developing the PRF nAff scale, focused on being near and winning the affection of others, and de-emphasized ideas of reciprocation and co-operation.

#### Measure of Need for Affiliation

As with nAch, both the TAT procedure and self-report procedures are used to measure nAff. However, this writer found no studies which investigated the relationship between the two measures. Results of studies of nAff as it relates to achievement do not appear to be differentially related.

to the type of measure used. Thus, the data do not suggest that the projective and non-projective measures of nAff measure different constructs, as might be anticipated in view of the findings for nAch. Consequently, the research reported below is not separated according to the type of measure employed.

#### Relationship between Need for Affiliation and Achievement

Research on the relationship between nAff and achievement is limited, and the results are often equivocal. Some researchers have reported significant positive correlations between nAff and academic achievement in elementary students. (e.g., Bhatnagar, 1969; Sears, 1972a) However, the results of several studies indicate that there is no significant relationship between nAff and academic achievement (Littig & Yeracaris, 1963; Mehrabian, 1970; Patros, 1970), while other studies suggest an inverse association (Acker, 1968; Ringness, 1965, 1967; Sinha, 1967; Taylor, 1964). Consistent with the research indicating an inverse relationship between nAff and achievement, the results of several studies (for a review, see Taylor, 1964) suggest that the underachiever obtains satisfaction in areas other than the academic, including social activities. Also, two investigations indicate that the underachiever is more socially skillful than the overachiever, and that he tends toward pleasure seeking and extroversion (Horrall, 1957; Middleton & Guthrie, 1959).

There is evidence which suggests that individuals high in nAff and low in nAch respond to different reinforcements than people high in nAch and low in nAff. French (1958) found that individuals high in nAff and low in nAch performed better than people high in nAch and low in nAff on a co-operative task in which subjects were reinforced for affiliative behaviour.

Interaction between Need for Achievement  
and Need for Affiliation

The way in which nAff is related to nAch is unclear. Auvenshine et al. (1970) found that college students with high nAch (EPPS) were significantly lower in nAff than students with low nAch. Similarly, Edwards (1954) reports a negative correlation of  $-.33$  between scores on the EPPS nAff and nAch scales. Jackson (1967), however, using the PRF scales, reports low but positive correlations of  $.10$  and  $.01$  for males and females, respectively. Rosenfeld (1964) obtained a positive correlation of  $.03$  between nAch and nAff as measured by the TAT.

There is evidence suggesting that the interaction between nAff and nAch and the effect of this interaction on achievement behaviour varies according to environmental demands. It is possible to set up a task in which nAff is in direct conflict with nAch. Such a conflict was arranged in a study by French (1956). She asked her subjects to choose two partners for a task. A subject had to choose from among four people, two of whom he liked but knew to have little ability for the task, and two of whom he disliked but had proved successful at the task. Thus subjects were required to choose between satisfying either their achievement or their affiliation needs. Subjects with high nAch and low nAff (projective measures) resolved the conflict according to expectation--they chose as partners the disliked but capable persons. Apparently for such people the successful solution of the task had priority over their social interests. Subjects with high nAff and low nAch made the opposite decision--they preferred to work with a liked person, even at the sacrifice of achievement at the task. In each case subjects tended to choose the liked person.

However, evidence of an experienced conflict between nAch and nAff was seen in subjects high in both needs. They apparently were unable to resolve the dilemma imposed by the task demands in favour of either need; rather, these subjects chose one partner from each group. A similar finding is reported by Walker and Heynes (1962). In their study, one member of a pair of subjects had to code a text which his partner (experimental collaborator) ostensibly had to decode immediately afterward. When his partner protested in a written note that he could not keep up with the work and that the other should slow down the coding, subjects had to choose between the achievement and interpersonal demands of the task. Of subjects who were equally strong in nAch and nAff (TAT measure), one-half kept up their work tempo and one-half decreased it. Thus, as a group, these subjects did not favour either demand. On the other hand, subjects who were higher in nAch than nAff decided on continuing the work without delay, while subjects higher in nAff slowed down. In addition, Horner (1968; 1972) presents evidence that the affiliative motive can be dysfunctional to performance; she found that men who were motivated both to achieve and to affiliate showed a performance decrement when asked to compete with another man. Horner suggests that this decrement may have resulted from a conflict of motives since out-performing a competitor may be antagonistic to making him a friend.

Thus it appears that there are situations in which an individual is not able to satisfy achievement and affiliation needs simultaneously. Under such conditions, an individual who is high in both needs apparently experiences a conflict. Competing with another person may make it difficult to establish and maintain a friendship with him. One place where this kind of difficulty is likely to occur is in a school that has a high press for

achievement. The competitive structure of the school makes it difficult to satisfy achievement and affiliative needs at the same time. As a result, students high in both  $nAch$  and  $nAff$  are likely to experience a conflict which may have considerable impact on their adjustment.

On the other hand, there are conditions wherein  $nAff$  and  $nAch$  are not likely to conflict with each other. For example, on a group task requiring co-operation rather than competition, achievement-oriented behaviour will involve some aspects of affiliative behaviour. In addition, if one's peer group values achievement, by achieving one can win the respect of friends and thereby satisfy both affiliation and achievement needs simultaneously. Rousseau (1971) has found that the most essential sources of reward for achievement are interpersonal relationships. Thus, the value one places on affiliation and the need for respect from others may be closely related to achievement motivation.

#### Sex Differences in the Relation of Need for Achievement and Need for Affiliation to Achievement

In spite of the assumed importance of the achievement motive as one of the major determinants of a person's striving to succeed, achievement theory appears to apply primarily to males. According to Bardwick (1971), findings from studies of achievement motivation in women often contradict achievement theory.<sup>5</sup> While the level of  $nAch$  in women is not significantly different from that in men (Adams & Sarason, 1963; Crandall et al., 1962), contrary to the findings with men, correlations between  $nAch$  and achievement are often low and nonsignificant in women (Sears, 1962; Sundheim, 1963).

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<sup>5</sup> Atkinson (1958) concludes that  $nAch$  in women is an unresolved problem.

Recall that the data regarding the relation of  $nAff$  to achievement exhibited little consistency. However, a close examination of the literature, taking into account the sex of subjects, reveals an important trend. The Ringness studies (1965;1967) which indicated that  $nAff$  is directly related to underachievement were based on samples of high school boys. Patros (1970), however, in a similar study of females subjects, found no difference in  $nAff$  between high and low achievement groups. Of greater significance is the evidence from several studies that  $nAff$ , rather than  $nAch$ , is positively correlated with academic achievement in girls (Lansky et al., 1961; Veroff, Atkinson, Feld & Gurin, 1960). Furthermore, Sears (1972a) in a study involving elementary school children, found significant correlations between  $nAch$  and achievement test scores in boys and between  $nAff$  and achievement test scores in girls. There were positive but non-significant correlations between  $nAch$  and achievement in girls, and between  $nAff$  and achievement in boys. Some authors (Crandall, et al., 1964; Garai & Scheinfeld, 1968) have suggested that achievement behaviour in girls is motivated not by mastery strivings, as with boys, but by affiliative motives. There is some additional evidence for this contention. In a nursery school study (Lahtinen, 1972), attempts to motivate children by appeals to mastery strivings succeeded with boys but failed with girls. Thus, it seems that for females  $nAff$  may be related to achievement just as  $nAch$  is related to achievement in males.

The fact that  $nAff$  tends to relate positively to academic achievement among females makes it difficult to predict the interactive effects of  $nAff$  and  $nAch$ . On the basis of the positive relationship between  $nAff$  and achievement, a conflict between  $nAff$  and  $nAch$  would seem to be unlikely to occur. Also, Tyler et al. (1962) found that affiliative and achievement



behaviours were positively related in girls but not in boys. Field (1951) found similar results with adult women. Orso (1969) found that nAch (TAT) in females increased significantly after affiliation arousal and decreased after achievement arousal, whereas male nAch scores were unaffected by achievement and affiliation arousal. Although these results suggest that for girls nAff and nAch may be positively related, recall that Jackson (1967) reported a near zero correlation and Edwards (1954) found a significant negative one.

In spite of the evidence of a positive relationship between nAff and achievement in females, there is also evidence that a conflict exists between nAch and nAff. Bardwick (1970) suggests that:

High school age girls are in a contradictory period-- after a lifetime of experiencing reward for achievement they simultaneously and suddenly find achievement actually threatening to their affiliative needs. For the majority of girls, excelling in academics gets to be threatening to social prestige (p. 177).

Horner (1969) found that the motive to avoid success was the only variable which correlated with performance in college women; women high in the motive to avoid success showed significant performance decrements under competitive task conditions. Horner suggests that fear of success exists in women because their anticipation of success is accompanied by the anticipation of negative consequences in the form of social rejection or loss of femininity. Thus, for women high in the fear of success variable, nAch conflicts with nAff, since these women perceive that satisfying their achievement needs will jeopardize their chances of satisfying their affiliation needs (i.e., achievement will result in social rejection).

Thus, the literature on nAff and nAch in women is perplexing. On the one hand, there is evidence of a positive relationship between nAff and achievement which suggests that there may be little or no conflict between

nAch and nAff in women. On the other hand, there is also some evidence of a conflict between these two needs, similar to the conflict hypothesized for males under competitive conditions. There is a great deal of evidence that females have a greater affiliative need than males (e.g., Oetzel, 1966; Walburg, 1969) and, therefore, the conflict between affiliation and achievement might occur more often for women. It seems that academic and professional women frequently allow their concerns with affective relationships to interfere with the full use of their cognitive capacities.

It is likely that the status of the conflict between nAff and nAch undergoes considerable change at different ages in women. In elementary school, excellence is rewarded with love and approval by parents, teachers, and peers. Even in the lower socio-economic class, sociometric studies show that academic excellence in girls is rewarded by popularity (Glidewell et al., 1972; Pope, 1953). However, in later years, approval is less frequently the reward for superior performance. "Driving a point home, winning an argument, beating others in competition, and attending to the task at hand without being side-tracked by concern with rapport require the subordination of affiliative needs (Hoffman, 1972, p. 136-37)." As Bardwick (1970) points out, it is not until adolescence that achievement becomes threatening to a girl's social prestige. Thus, this conflict may be as intense in high school girls as in boys, if not more intense.

#### Summary Statement of the Problem

The primary objective of this study was to examine the interactive effects of nAch and nAff on the academic adjustment (e.g., grades) and personal adjustment (e.g., anxiety) of male and female high school students. In 1938, Murray hypothesized that there is a basic conflict between nAch

and nAff; other authors (e.g., Cronbach, 1963), concerned primarily with the education process, have more recently postulated a similar conflict. In spite of the important implications of this conflict, the effect of the interaction between nAch and nAff has received little attention from researchers.

On the basis of the above review of the literature it can be concluded that there is some evidence (e.g., French, 1956) which tends to confirm the existence of a conflict between nAch and nAff, at least under environmental conditions which force a person to choose between satisfying his achievement needs and satisfying his affiliation needs. In addition, research suggests that the occurrence and intensity of this conflict depends on the strength of nAch and nAff in the individual and also the task demands (Horner, 1968; Walker & Heynes, 1962). The maximal conflict seems to occur in individuals high in both nAch and nAff. This writer believes that the conflict between nAch and nAff is especially likely to exert its influence in the school situation, given that the system is a competitive one wherein the student is often able to satisfy one of these needs only at the expense of the other need.

The literature on sex differences is confusing. While research (e.g., Lahtinen, 1972) typically indicates that nAch correlates positively with actual school performance in males, a positive correlation is less commonly found in females. Furthermore, there is some evidence (e.g., Lansky et al., 1961) that nAff, rather than nAch, is positively correlated with academic achievement in females. This pattern of results suggests that a conflict between nAch and nAff is less likely to occur in females than in males. However, in spite of the evidence suggesting the absence of a conflict

between  $nAch$  and  $nAff$  in females, a conflict has been postulated by some writers (Bardwick, 1970; Horner, 1972). For instance, Bardwick (1970) suggests that the conflict develops at the time of adolescence, when females are suddenly confronted with the cultural role definition which discourages achievement in women. In agreement with Bardwick (1970) and Horner (1972), the present experimenter expected that this conflict is present in high school age females and that, although different in terms of its development from the conflict in males, the effects and manifestations of the conflict would be similar for both sexes. It was expected that the conflict between  $nAch$  and  $nAff$  would manifest itself in terms of the academic adjustment and possibly the personal adjustment of students.

#### Hypotheses

In the school situation, where the competitive structure often makes it difficult for the student to satisfy either  $nAch$  or  $nAff$  without sacrificing satisfaction of the other need,  $nAff$  may interfere with school performance. Thus, the conflict between  $nAch$  and  $nAff$  is likely to manifest itself in terms of poorer academic adjustment of students high in both  $nAch$  and  $nAff$ , as compared with students high in  $nAch$  and low in  $nAff$ .

Hypothesis 1. Among students high in  $nAch$ , those low in  $nAff$  obtain higher grade point averages (GPAs) than students high in  $nAff$ ; whereas, among students low in  $nAch$ , there is no difference in GPA between those high in  $nAff$  and those low in  $nAff$ .

The following three hypotheses relate to the psychological aspects of the conflict between  $nAch$  and  $nAff$ . They are based on the rationale that the conflict will affect a student's personal adjustment. Students who are constantly having to study in order to satisfy their strong achievement needs

when they also really want to be with friends, are likely to be more anxious than students who are not high in both needs. Similarly, students who feel guilty when they are with friends because they "should be studying" are liable to experience difficulties in personal adjustment.

Hypothesis 2. Students high in both nAch and nAff manifest a higher level of anxiety than other students.

Hypothesis 3. Students high in both nAch and nAff manifest poorer personal adjustment than other students (as measured by the Personal Adjustment scale).

Hypothesis 4. Students high in both nAch and nAff manifest a higher level of neuroticism than other students.

The following hypothesis is based on the rationale that individuals develop social skills through experience in relating to others. In addition, since students high in nAff are likely to spend more time with friends, they are likely to feel more at ease socially than students low in nAff. Thus, in spite of the expectation that the conflict between nAch and nAff interferes with other aspects of a student's adjustment, it is anticipated that students who are high in both needs feel more socially at ease than students high in nAch and low in nAff.

Hypothesis 5. Students high in both nAch and nAff manifest fewer feelings of social inadequacy than students who are high in nAch and low in nAff.

A sixth hypothesis can be formulated with regard to the amount of time spent studying. It might be expected that having strong needs in two areas is overly demanding of a student's time and energy, and that, as a result, the student who is high in both nAch and nAff spends less time studying than the student who is high only in nAch. This difference in time spent studying

would then account for the lower grades expected (Hypothesis 1) from these students. However, preliminary studies (see footnote, p.3) indicated that students high in both nAch and nAff claim to spend more time studying than those high in nAch and low in nAff (although the former group receives lower grades). This finding is not necessarily inconsistent with the conflict between nAch and nAff. It is possible that students in the conflict group are less efficient in studying than students who do not experience the conflict. For example, students high in both needs may tend to study with friends, and, even when studying alone, devote part of their attention to social concerns, to the detriment of their academic work. Thus, primarily on the basis of the preliminary findings, the following hypothesis was formulated.

Hypothesis 6. Among students high in nAch, those low in nAff spend less time studying than those high in nAff.

Support for Hypotheses 1 and 6 would mean that students high in nAch and low in nAff are more efficient in performing academically than students high in both nAch and nAff.

## CHAPTER II: METHOD

### Subjects

The subjects were 86 male and 119 female grade 11 students enrolled in a coeducational high school located in Leamington, Ontario, a city of 10,000 inhabitants.

### Instruments

Each participant in the study was given a package containing a four-part questionnaire and two IBM answer sheets (see Appendix A). The first page of the questionnaire was a Student Agreement Form which a subject signed, giving the researcher permission to use data from the subject's school records.<sup>6</sup> The remaining pages contained the following questionnaire scales:

1. Need for Achievement scale of the PRF (Jackson, 1967; in Part II of the questionnaire).
2. Need for Affiliation scale of the PRF (Jackson, 1967; Part II)
3. Personal Adjustment scale (Moore & Holtzman, 1965; Part IV)
4. Social Inadequacy scale (Moore & Holtzman, 1965; Part IV)
5. Neuroticism Scale Questionnaire (Scheir & Cattell, 1961; Part III)
6. Miscellaneous questions, including background information items (Part I)

Instructions for completing each part of the questionnaire were written on each section of the questionnaire booklet.

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<sup>6</sup> Parental approval also was obtained by having one of the student's parents sign a letter which the experimenter had the subjects take home.

The Need for Achievement and Need for Affiliation scales of the PRF were selected for use in this research for several reasons. First, Acker (1968), found that the PRF nAch Scale correlates more highly than projective measures of nAch with actual achievement. Second, Jackson (1967) has provided both male and female norms for the PRF. Third, the PRF has been recognized as one of the better self-report personality measures. For example, Kelly (1972) says:

Its publication in 1967 occurred only after several years of systematic effort on the part of the author to develop an instrument which would make possible the measurement of personality traits with levels of precision and validity formerly associated only with intellectual abilities and scholastic achievement. On the basis of the evidence thus far available, it would appear that he has achieved this goal to a degree not heretofore considered possible (p. 298).

Also, Anastasi (1972) observes that "unusual care was exercised in the original formulation of items so as to conform to the theoretically-based trait definition and to ensure distinctness among traits and reduction of irrelevant variance (p. 297)."

"Each scale of the PRF contains 20 items. All scales are bipolar; this procedure provides an effective control of acquiescence response bias. Items were selected on the basis of high biserial correlation with total scores on their own scales and low biserial correlation with total scores on other trait scales and on the Desirability scale. Jackson (1967) operationally defines the relevant variables as follows:

**Achievement:** An individual high in this variable is someone who aspires to accomplish difficult tasks; maintains high standards and is willing to work toward distant goals; responds positively to competition; is willing to put forth effort to attain excellence.

**Affiliation:** A person high in this variable enjoys being with friends and people in general; accepts people readily; makes efforts to win friendships and maintain associations with people (p. 6).



Odd-even reliability coefficients for nAch and nAff range from .72 to .81. Test-retest reliabilities are .80 and .79 for nAch and nAff, respectively. In the PRF manual, Jackson (1967) cites evidence demonstrating adequate validity for each scale included in the inventory. This study will employ Form A of the nAch and nAff scales (Jackson, 1965).

Moore and Holtzman (1965) describe the 25-item Personal Adjustment scale as measuring inner conflict, worry, and feelings of personal inadequacy and the 12-item Social Inadequacy scale as measuring feelings of social discomfort and difficulty in making friends.

The Neuroticism Scale Questionnaire (40 items) is described as measuring the major neurotic-associated personality features. Thus, there are four subscales--Overprotection and Emotional Sensitivity; Depressiveness; Submissiveness; and Anxiety. The overall score yields a measure of neuroticism. For the purposes of the present study only the anxiety measure and the Personal Adjustment score were considered relevant.

A separate questionnaire, constructed by the experimenter, requested information about the amount of time per week the student devotes to school work and to socializing with friends. Biographical information also was requested including data necessary to control for social class. Three measures of social class were obtained--father's level of education, mother's level of education, and father's occupational status (based on a socio-economic index for occupations in Canada developed by Blishen, 1967).

Students' GPAs and IQ (Lorge or Dominion test) were obtained from the students' files.

#### Procedure

The questionnaire was administered on a group basis to the subjects

during a single two hour period. After passing out the test materials, the experimenter introduced herself as follows:

I am Joy Green, a graduate student from the University of Windsor. As part of my work towards a Master's degree I am collecting information regarding the interests and attitudes of high school students; therefore, I will greatly appreciate it if each of you would participate, although participation in the study is entirely voluntary. Everything you put down will be confidential--no one will see it except me.

The experimenter then read the following instructions to the subjects:

Each envelope contains 2 IBM answer sheets and a questionnaire in 4 parts. Please check to see that you have all these materials. Please sign the Student Agreement Form. The booklets you are going to fill out contain 4 parts. For Parts 1 and 3, mark your answers on the questionnaire pages. For Part 2, mark your answers on the IBM answer sheet labelled Educational Research Questionnaire, Part II. To mark your answer, blacken the space by filling it in with the pencil. Do not circle it or make any other marks. In marking your answers, please make sure that the number of the statement is the same as the number on the answer sheet. For Part IV, indicate your answers on the IBM form labelled University of Windsor, Multiple Choice Examination Answer Sheet. For this part of the questionnaire, you will be required to choose one of five answers for each question. You will decide whether your choice is A, B, C, D, or E, and then fully blacken the space under that letter. Indicate only one choice for each question. Complete instructions are given for each part in the questionnaire booklet. When you finish Part I, go on to Part II, and continue working on the parts in order, starting with Part I. Work individually and as quickly as possible; do not spend too much time on any one question. It is very important to this research that you answer every question. If you leave out a question, I may not be able to use parts of your data. It is your option to leave out an item which you do not wish to answer; however, I would appreciate it very much if you would make sure that you fill in all the items. Please respond to each statement honestly and accurately. When you finish, check to make sure you have answered all the items.

Unless specific questions concerning these instructions were asked, the experimenter did not provide further assistance to the subjects during completion of the questionnaire.

Five minutes prior to the end of the allotted period the experimenter asked the subjects to ensure that they had completed all items, and if so, to place all test materials in the envelopes to be collected.

During the following week, the experimenter r - to the school  
and collected the required achievement and I. Q. this included each  
subject's most recent I. Q. score and his over- grade point average.

### CHAPTER III: RESULTS<sup>7</sup>

#### Preliminary Analyses

In order to divide subjects into high and low nAch and nAff groups, the median scores on the PRF nAch and nAff scales were computed for males and females separately (nAch: male, Mdn. = 10.93; female, Mdn. = 11.00; nAff: male, Mdn. = 15.81; female, Mdn. = 17.08). Subjects were assigned to the 'high' category for either nAch or nAff if their scores fell above the respective medians, and the 'low' category if their scores fell below the medians.<sup>8</sup> The subjects then were split into four groups for each sex: high nAch high nAff (HH); high nAch low nAff (HL); low nAch high nAff (LH); and low nAch low nAff (LL).

Pearson product-moment correlation coefficients were computed between the dependent variables and the following potential covariates: mother education, father education, father occupation, and IQ.<sup>9</sup> The results of these correlations (see Appendix C) indicated that each of these four potential covariates was significantly correlated with one or more of the dependent variables. A 2 X 2 X 2 (Sex X nAch X nAff) analysis of variance was carried out on each of the potential covariates. The mean scores on IQ,

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<sup>7</sup> All the raw data are presented in Appendix B.

<sup>8</sup> Females who scored at the median of nAch were assigned to the high nAch group.

<sup>9</sup> Data on father's occupation, father's education and/or mother's education were not obtained for some subjects. See Appendix D for information regarding the number of subjects for whom such information was available.

father's occupation, father's education and mother's education are presented in Appendix D, and summaries of the analyses are reported in Appendix E. These analyses of variance indicated that there were significant differences between some of the experimental groups on IQ, father's education and mother's education. There were no significant differences with respect to father's occupation. Therefore, in order to match the groups on IQ, father's education and mother's education, the data from four subjects were discarded. The subjects whose data were deleted were three HL males and one LH male. All four subjects had high scores on IQ, father and mother education. (The mean scores on IQ, father education, mother education, and father occupation after the deletion of data are presented in Appendix F.) Once these data were deleted, analyses of variance (see Appendix G) indicated no significant between-group differences on the covariates.<sup>10</sup> Thus, the effects of nAch and nAff were analysed using the data from 191 subjects. Table 1 presents the number of subjects in each experimental group.

#### Academic performance

In order to assess the effects of sex, nAch, and nAff on school performance, a 2 X 2 X 2 analysis of variance (unweighted means, Winer, 1962, pp. 224-227) on the subjects' GPAs was carried out. The mean GPA for each condition is shown in Table 2, and the analysis of variance is summarized in Table 3.

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<sup>10</sup> There was a marginally significant A X B X C interaction with regard to mother's education. However, consideration of the between-group differences in mother's education indicates that they cannot account for significant effects in the subsequent major analyses.

TABLE 1

Number of Subjects in Each Condition

Condition	Male	Female	Combined
High nAch High nAff	25	27	52
High nAch Low nAff	16	39	55
Low nAch High nAff	18	24	42
Low nAch Low nAff	15	27	42

TABLE 2

Mean GPA for Each Condition

Condition	Male	Female	Combined
High nAch High nAff	62.0	65.4	63.7
High nAch Low nAff	66.4	69.1	67.7
Low nAch High nAff	60.3	59.6	60.0
Low nAch Low nAff	57.7	61.5	59.6

TABLE 3

Summary of Analysis of Variance  
on Grade Point Average

Source	df	MS	F
Sex (A)	1	235.32	3.94**
nAch (B)	1	1529.67	25.60***
nAff (C)	1	150.94	2.53
A X B	1	24.86	0.42
B X C	1	37.24	0.62
A X C	1	208.43	3.49*
A X B X C	1	73.39	1.23
Within Cell	183	59.75	

\*  $p < .10$

\*\*  $p < .05$

\*\*\*  $p < .01$



Table 3 indicates that there were significant main effects due to sex and nAch. Females had higher GPAs than males, and students high in nAch had higher GPAs than students low in nAch.

Hypothesis 1. Among students high in nAch, those low in nAff obtain higher grade point averages (GPAs) than students high in nAff; whereas, among students low in nAch, there is no difference in GPA between those high in nAff and those low in nAff.

Hypothesis 1 predicts a nAch X nAff interaction. A marginally significant interaction was found (see Figure 1). As hypothesized, the HL subjects appear to have higher grade point averages than the HH subjects. Analyses of the difference in GPA between the HH and HL groups were carried out for males and females separately and combined. The results of the analyses provide support for Hypothesis 1. The HL subjects obtained significantly higher GPAs than the HH subjects when the male and female data are combined ( $t = 2.67$ ,  $df = 183$ ;  $p < .01$ ); while for male and female data considered separately, the difference between the HH and HL groups achieved marginal significance (males:  $t = 1.78$ ,  $df = 183$ ;  $p < .10$ ; females:  $t = 1.91$ ,  $df = 183$ ;  $p < .10$ ). There were no significant differences between the LH and LL groups.

#### Personal Adjustment

In order to assess the effects of sex, nAch, and nAff on the personal adjustment of students,  $2 \times 2 \times 2$  (Sex X nAch X nAff) analyses of variance were computed on the subjects' scores on the Anxiety, Personal Adjustment and Neuroticism scales. Cell means for anxiety and personal adjustment are summarized in Table 4; cell means for neuroticism are summarized in Table 5. Results of the analysis of variance are presented in Tables 6 and 7. The significant main effects are as follows: subjects who were low in nAch reported

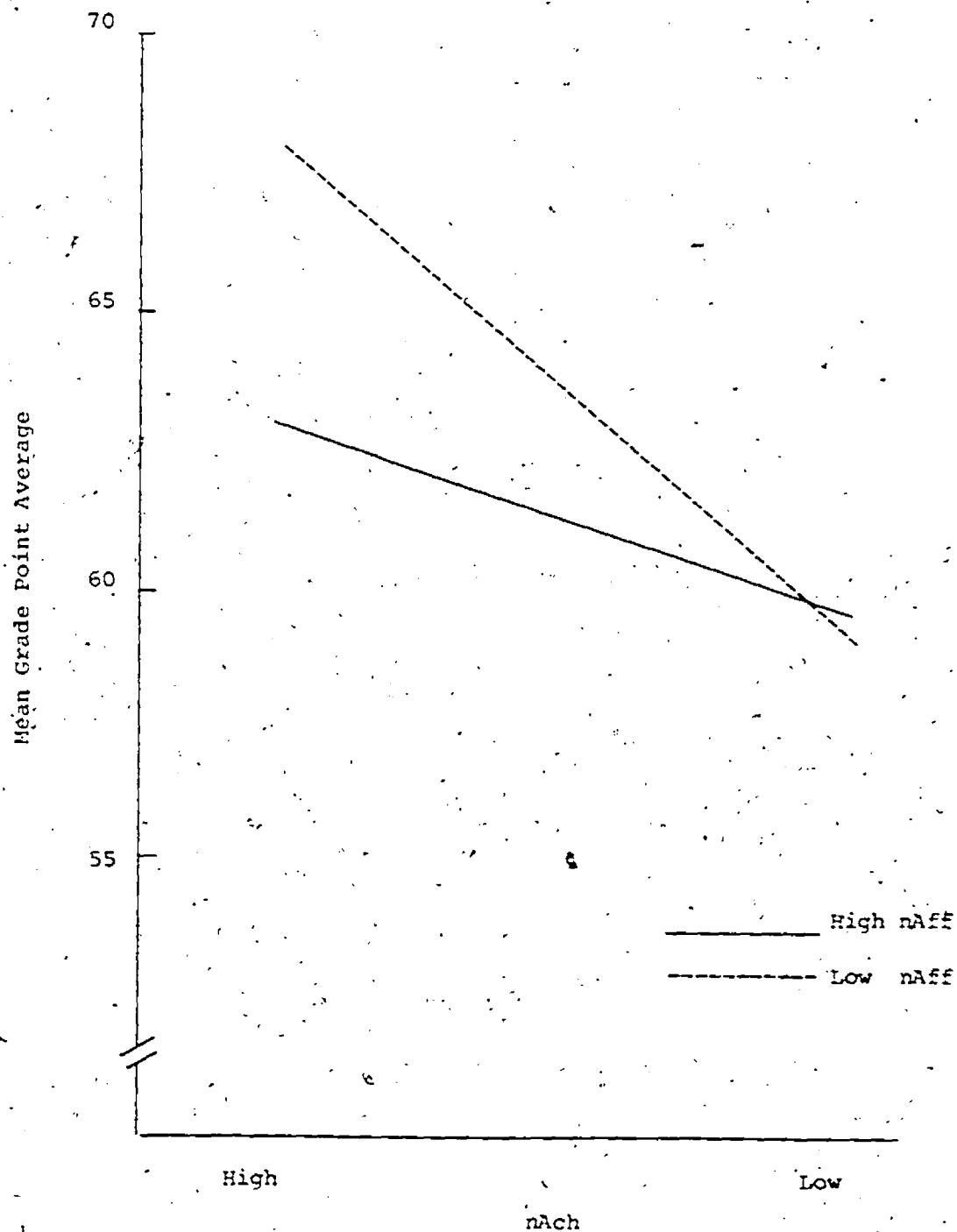


Fig. 1. Mean Grade Point Averages Showing the Interaction between nAch and nAff.

TABLE 4  
Mean Scores on Anxiety and Personal Adjustment

Condition	Personal Adjustment			Anxiety		
	Males	Females	Combined	Males	Females	Combined
High nAch, High nAff	13.76	14.48	14.12	11.08	11.46	11.27
High nAch, Low nAff	15.69	14.61	15.15	11.25	12.03	11.64
Low nAch, High nAff	15.39	14.71	15.05	12.72	12.54	12.63
Low nAch, Low nAff	15.00	18.15	16.57	12.40	12.80	12.60

TABLE 5  
Mean Scores on Neuroticism

Condition	Males	Females	Combined
High nAch, High nAff	35.08	45.38	40.23
High nAch, Low nAff	37.44	43.82	40.63
Low nAch, High nAff	37.56	43.96	40.76
Low nAch, Low nAff	36.60	45.88	41.24

TABLE 6

Summary of Analyses of Variance on Anxiety  
and Personal Adjustment

Source	Anxiety <sup>a</sup>			Personal Adjustment <sup>b</sup>		
	df	MS	F	df	MS	F
Sex (A)	1	5.01	0.50	1	12.10	0.24
nAch (B)	1	57.94	5.69**	1	60.51	1.18
nAff (C)	1	1.20	0.12	1	70.98	1.39
A X B	1	2.35	0.23	1	21.81	0.43
B X C	1	1.70	0.17	1	2.73	0.05
A X C	1	2.57	0.25	1	11.18	0.22
A X B X C	1	0.09	0.009	1	86.49	1.69
Within Cell	179	16.19		182	51.23	

\*\*  $p < .05$

<sup>a</sup> Data on Anxiety were not obtained from 4 subjects

<sup>b</sup> Data on Personal Adjustment were not obtained from 1 subject

TABLE 7  
Summary of Analysis of Variance  
on Neuroticism<sup>a</sup>

Source	df	MS	F
Sex (A)	1	2815.0	57.90***
nAch (B)	1	13.82	0.28
nAff (C)	1	8.29	0.17
A X B	1	2.70	0.06
B X C	1	0.08	0.002
A X C	1	2.91	0.06
A X B X C	1	124.08	2.56
Within Cell	179	48.62	

\*\*\* $p < .01$

<sup>a</sup> Data on Neuroticism were not obtained from 4 subjects

more anxiety than subjects high in nAch, and females scored higher on Neuroticism than males. There were no significant main effects with respect to the Personal Adjustment measure.

Hypotheses 2, 3 and 4 focus on the personal adjustment of students as it relates to nAch and nAff.

Hypothesis 3. Students high in both nAch and nAff manifest a greater level of anxiety than other students.

Hypothesis 4. Students high in both nAch and nAff manifest poorer personal adjustment than other students.

Hypothesis 5. Students high in both nAch and nAff manifest a higher level of neuroticism than other students.

No significant interactions were found between nAch and nAff on any of the personal adjustment variables. Thus the data do not support Hypotheses 2, 3 and 4.

#### Social Adjustment

A 2 X 2 X 2 (Sex X nAch X nAff) analysis of variance was carried out on the Social Inadequacy scale. Cell means for Social Inadequacy are presented in Table 8. Results of the analysis of variance are summarized in Table 9. Table 9 indicates that there was a significant main effect of nAff on Social Inadequacy. Subjects low in nAff were more socially inadequate than subjects high in nAff.

Hypothesis 5. Students high in both nAch and nAff manifest fewer feelings of social inadequacy than students high in nAch and low in nAch.

A comparison of the mean scores on the Social Inadequacy scale indicated that subjects high in nAch and low in nAff scored significantly higher on social inadequacy than those high in nAff and nAch among male subjects.

TABLE 8  
Mean Scores on Social Inadequacy

Condition	Social Inadequacy		
	Males	Females	Combined
High nAch, High nAff	5.24	7.15	6.19
High nAch, Low nAff	8.19	7.37	7.78
Low nAch, High nAff	5.61	6.54	6.08
Low nAch, Low nAff	9.06	8.82	8.94



TABLE 9

## Summary of Analysis of Variance on Social Inadequacy

Source	Social Inadequacy <sup>a</sup>		
	df	MS	F
Sex (A)	1	8.52	0.41
nAch (B)	1	11.91	0.58
nAff (C)	1	215.71	10.46***
A X B	1	0.46	0.02
B X C	1	17.88	0.87
A X C	1	41.67	2.02
A X B X C	1	6.51	0.32
Within Cell	182	20.64	

\*\*\* p .01

a

Data on Social Inadequacy were not obtained from 1 subject

( $t = 2.02$ ,  $df = 182$ ;  $p < .05$ ) but not among females. Thus, for male subjects the data support Hypothesis 5, but the data for females do not support the hypothesis.

Extra-curricular activities: Studying and Socializing

A 2 X 2 X 2 (Sex X nAff X nAch) analysis of variance was carried out on the number of hours per day the subjects said they spent doing school work, and a similar analysis was performed on hours per day spent with friends. Group means for each activity are summarized in Table 10. The results of the analyses are reported in Table 11. Significant main effects were found for sex and nAch with respect to hours spent studying--females reported studying more than males, and students high in nAch more than students low in nAch. The effect of sex on hours spent with friends (males greater than females) was marginally significant.

However, a significant sex X nAch interaction is indicated for both variables. In females, the amount of time spent studying and socializing depends heavily on the level of nAch. In contrast to low nAch females, high nAch females reported spending more time studying ( $t = 4.72$ ,  $df = 182$ ,  $p < .005$ ) and less time socializing ( $t = 3.58$ ,  $df = 181$ ,  $p < .005$ ). In males, time spent studying and time spent with friends do not change significantly in relation to the level of nAch. The follow-up analyses also indicated that the effects of sex on hours spent studying and with friends were due primarily to the difference between males and females in the high nAch group. Significant differences between males and females were found among high nAch subjects (for hours spent working,  $t = 3.43$ ,  $df = 182$ ,  $p < .005$ ; for hours spent with friends,  $t = 3.51$ ,  $df = 181$ ,  $p < .005$ ), whereas no significant differences between males and females were found among low nAch subjects.

TABLE 10

Hours Per Day Spent Studying and with Friends

Condition	Studying <sup>a</sup>			With Friends <sup>b</sup>		
	Males	Females	Combined	Males	Females	Combined
High nAch, High nAff	1.07	1.52	1.22	4.04	2.11	3.08
High nAch, Low nAff	1.07	1.72	1.39	4.38	2.19	3.28
Low nAch, High nAff	1.17	1.08	1.13	4.11	4.88	4.49
Low nAch, Low nAff	0.80	1.11	0.96	3.00	3.30	3.15

<sup>a</sup> Data pertaining to number of hours studying were not obtained for 1 subject.

<sup>b</sup> Data pertaining to number of hours with friends were not obtained for 2 subjects.

TABLE 11

Summary of Analyses of Variance on Hours Per Day  
Spent Studying and With Friends

Source	Studying <sup>a</sup>			with Friends <sup>b</sup>		
	df	MS	F	df	MS	F
Sex (A)	1	5.90	9.40***	1	25.39	3.14*
nAch (B)	1	3.05	4.86	1	17.93	2.22
nAff (C)	1	0.0001	0.0002	1	14.10	1.75
A X B	1	2.82	4.50**	1	72.87	9.03***
B X C	1	0.54	0.86	1	1.43	0.18
A X C	1	1.27	2.02	1	26.20	3.24*
A X B X C	1	0.32	0.50	1	0.12	0.02
Within Cell	182	0.63		181	8.08	

\*  $p < .10$   
\*\*  $p < .05$   
\*\*\*  $p < .01$

<sup>a</sup> Data on hours spent studying were not obtained from 1 subject.

<sup>b</sup> Data on hours spent with friends were not obtained from 2 subjects.

Hypothesis 6 concerns the amount of time spent studying.

Hypothesis 6. Among students high in nAch, those high in nAff spend more time studying than those low in nAff.

There was no significant difference between the HH and HL groups in time spent studying. Thus the data do not support Hypothesis 6.

## DISCUSSION

### CHAPTER IV

The major hypothesis underlying this study was that students who have strong needs for achievement and for affiliation experience a conflict in the school environment, and that this conflict interferes with their academic adjustment and with their personal adjustment.

The effects of nAch and nAff on the students' grade point averages were analysed. The results of this analysis indicated that both males and females high in nAch obtained significantly higher grade point averages than those low in nAch. For females this result is contrary to the results of some studies which have shown no significant correlation between nAch and school performance (Sears, 1962; Sundheim, 1963), but concurs with the typical results with male subjects (Acker, 1968; Patros, 1970). Also in accordance with earlier studies of male subjects (Patros, 1970) and contrary to the results of some studies of females (e.g. Sears, 1972a), there was no significant effect of nAff on GPA.

The results provided support for the hypothesis (Hypothesis 1) that students high in both nAch and nAff obtain lower GPAs than students high in nAch and low in nAff. For males and females together, students high in both needs obtained significantly lower eleventh grade averages than students who were similarly high in nAch but low in nAff. For males and females considered separately, the differences attained marginal significance.

Another hypothesis (Hypothesis 6) related to academic performance was derived from the results of pilot studies with college students. This

hypothesis proposed that students in the conflict group (HH) would report spending more time studying than students high only in nAch. However, contrary to the expectation, there was no significant difference between the HH and HL groups in amount of time spent studying.

The results pertaining to school performance (GPA) support the hypothesized conflict between nAch and nAff. One possible explanation of the performance decrement of students in the HH group is that having strong needs in two areas is overly demanding of the student's time and energy. Thus, he emphasizes the satisfaction of one need to the neglect of the other need or strives to partially satisfy both needs. However, since this explanation suggests that students in the conflict group spend less time studying than those in the no conflict group, the present results are inconsistent with it. There was no significant difference in time spent studying between the HH and HL groups, meaning that the absolute amount of studying cannot account for the higher grades obtained by HL students.

The fact that students in the conflict group spent virtually the same amount of time studying as, but obtained lower grades than, students in the HL group is consistent with the view that the existence of the conflict interferes with the efficiency of academic performance. Thus, although Hypothesis 6 was not supported, the results pertaining to time spent studying do not conflict with the results regarding GPA which suggest that students high in both nAch and nAff experience a conflict in the school situation. It may be that students high in nAff tend to study with other people, and that studying is mixed with socializing, to the detriment of efficiency. In addition, students high in nAff may, even when studying alone, devote part of their attention to planning or reviewing their interpersonal activities

and/or to reconciling themselves with giving up social activities in order to complete school assignments.

While the above explanation may account for the results pertaining to GPA, there is evidence which supports an alternative explanation. On the basis of the results of previous studies which examined the effect of task demands on the interaction between  $nAch$  and  $nAff$  (French, 1956; Horner, 1972), it is hypothesized that the conflict between  $nAch$  and  $nAff$  is most likely to occur under conditions of individual competition. Although no measures of school environment were obtained, it is reasonable to assume that the conditions in the high school under consideration foster individual competition. One might speculate that it is the competition in the school environment which accentuates the conflict in students high in both  $nAch$  and  $nAff$ . Having to compete with a fellow student may interfere with the development of a friendship with that person. Students for whom making friends at school is very important (i.e. those high in  $nAff$ ) may not perform as well as they are able, when maximal performance interferes with the satisfaction of their strong affiliation needs.

In males, where society encourages academic achievement, the failure to perform as well as they are able must be a significant problem. For females, the situation is somewhat different. Recall that previous studies of the relationship between  $nAch$ ,  $nAff$ , and school achievement presented evidence both supporting (Horner, 1968) and contradicting (Sears, 1972a) the hypothesis that a conflict between  $nAch$  and  $nAff$  occurs in females. Further examination of the literature reveals that studies which found a significant correlation between  $nAff$ , rather than  $nAch$ , and academic performance in girls (e.g. Sears, 1972a) were carried out on elementary school subjects. The



differences between the results of studies of achievement in young girls and the results of the present study, which indicated a positive correlation between nAch, rather than nAff, and school grades, are consistent with Bardwick's (1972) suggestion that for females the conflict between nAch and nAff develops at the time of adolescence. Bardwick (1972) explains this sudden development of the conflict in terms of the cultural role definition which, from the onset of adolescence begins to discourage achievement in women. Whereas the pre-adolescent female receives social reinforcement for achievement, from adolescence onward a woman who is highly successful, and especially one who asserts herself in competition with men, is likely to face social rejection. Thus, for a woman with strong affiliation needs, striving to achieve in a competitive environment involves considerable sacrifice.

An additional finding with respect to the effect of nAch on the amount of time spent studying and socializing is that females high in nAch spend significantly more time studying and less time with friends than females low in nAch, whereas, for males, the amount of time spent studying and socializing does not vary in relation to nAch. This finding suggests that the conflict between nAch and nAff is more intense among females who are high in both nAch and nAff. These females apparently sacrifice some satisfaction of their affiliation needs (i.e. they spend less time with friends) in favour of working toward satisfying their needs for achievement (i.e. they spend more time studying). However, even though they spend the same amount of time studying as females high in nAch and low in nAff, their actual achievement is poor in relation to those students. Thus it appears that they are unable adequately to satisfy either their strong needs for achievement or their strong needs for affiliation. There are, however, no additional indi-

cations in the findings of this study that the conflict between nAch and nAff is more intense for women than for men. It may be that the conflict is not more intense for females, but that it has a more visible effect on their day-to-day lives.

Hypotheses 2, 3, and 4, concerning anxiety, personal adjustment and neuroticism, respectively, were based on the rationale that the conflict between nAch and nAff would manifest itself in the students' personal adjustment. The results of the analyses on these variables do not support Hypotheses 2, 3, and 4. The only significant between-group difference with respect to anxiety was that students low in nAch are more anxious than students who do not have strong achievement needs. This result is contrary to the expectation of this researcher that students high in nAch would be higher in anxiety because they are more likely than other students to respond (by becoming anxious) to the achievement pressures in the school environment. This researcher is unable to account for the relatively low anxiety level of high nAch students. The only significant between-group difference in neuroticism was that females were higher than males. This result is consistent with the normative data presented in the manual for the Neuroticism Scale Questionnaire (Scheir & Cattell, 1961). There were no significant between-group differences found with respect to the Personal Adjustment measure. The lack of support for the hypotheses concerning personal adjustment suggests that the apparent conflict between nAch and nAff is not sufficiently dominant as to affect the overall psychological adjustment of students.

Hypothesis 5 predicted that HH students are more socially adequate than HL students. The hypothesis was based on the rationale that students high in

nAff are more socially at ease than students low in nAff. The results of the analyses on the Social Inadequacy scores did, in fact, indicate that students low in nAff were significantly more socially inadequate than those high in nAff. Moreover, Hypothesis 5 was supported for males but not for females. Males who were high in both nAch and nAff scored lower on social inadequacy than those who were high in nAch and low in nAff. This finding, in conjunction with the finding regarding academic performance, suggests that HL males perform better at school but, perhaps, at some expense to their social adjustment. This result is similar to the finding of Bauer (1970) that students high in both needs exhibit a better ego-identity than students high only in nAch. Thus, it appears that although high affiliation needs may interfere with a student's efficiency in performing academically, his interpersonal orientation is an important aspect of his personality which should not be discouraged in favour of promoting achievement (see Cronbach, 1963, cited on page 2). In addition, it may be that school is a place where students who are high in nAch and low in nAff tend to focus exclusively on academic achievement and, perhaps, receive little encouragement to develop interpersonal skills. Since this focusing appears to be detrimental to the social adjustment of male students, and also since interpersonal skills are very important outside the school environment, one might argue in favour of having education encompass human relations training within its sphere.

#### Conclusions and Implications

In the introduction, it was hypothesized that the conflict between nAch and nAff is most likely to be experienced under conditions of individual competition by the individual who is high in both needs. In addition, the work of French (1958) demonstrated that people who are high in nAff are

able to perform better than others at a task requiring cooperation among team members. This finding and the results of the present study suggest that some students could benefit considerably from a more group-oriented cooperative learning environment than from an exclusively competitive situation. However, since this study involved only one school, it provides no evidence for stating that the degree of competitiveness within the school environment accounts for the existence of the conflict between nAch and nAff. Further research is needed to determine the influence of individual competition on the performance of students characterized by the various combinations of nAch and nAff, and, in addition, to further specify the factors within the educational system which account for the poorer social adjustment of male students who are high in nAch and low in nAff. A replication of this study in several schools, in order to compare the effect of different environments on the interaction between nAch and nAff, would be helpful in answering these questions.

Regarding the conflict in women, further study is needed to evaluate the hypothesis that the cultural role definition which discourages achievement in women is related to the development of the conflict between nAch and nAff. The "fear of success" measure developed by Horner (see Introduction, p. 13) is described as measuring a fear in women that high achievement will result in social rejection. A replication of the present study with the additional measure of "fear of success" could be very helpful in determining whether or not the performance decrement in females high in both nAch and nAff does represent an avoidance reaction (i.e., avoidance of the social rejection which is likely to accompany achievement striving in women).

## APPENDIX A

## QUESTIONNAIRE

## ANSWER BOOKLET

## Student Agreement for Research Project

I the undersigned give permission for the researcher associated with this project to inspect my school records. I agree to this with the understanding that only information related to academic performance will be looked at and that all information will be kept strictly confidential.

Signature of Student \_\_\_\_\_

## EDUCATIONAL RESEARCH QUESTIONNAIRE

PART I

## General Information

Instructions

For Part I please write your answers in this booklet. Answer all of the questions. Use pencil only.

1. Name \_\_\_\_\_  

Last
First
2. School \_\_\_\_\_
3. Grade \_\_\_\_\_
4. Sex \_\_\_\_\_
5. What is your father's occupation (or the occupation of the head of your household if your father is not present at home)? Please be specific. For example, do not write "engineer" or "salesman"; write the kind of engineer or salesman. \_\_\_\_\_
6. How old are you?  

___10	___13	___16	___19
___11	___14	___17	___20
___12	___15	___18	___21
7. How much education did your father have? (Check one)  

___some primary school	___finished high school
___finished primary school	___some university
___some high school	___finished university
___do not know	
8. How much education did your mother have? (Check one)  

___some primary school	___finished high school
___finished primary school	___some university
___some high school	___finished university
___do not know	

9. Estimate the average number of hours per day that you spend studying outside of school. \_\_\_\_\_

Estimate the average number of hours per day that you spend with friends outside of school. \_\_\_\_\_



## EDUCATIONAL RESEARCH QUESTIONNAIRE

## PART II

## Need for Achievement and Need for Affiliation Scales

Instructions

- A. Please do not write on this questionnaire. Answer all questions on the separate answer sheet labelled Part II.
  - B. Below are a series of statements. Read each one, decide how you feel about it, and then mark your answer in the separate answer sheet. If you agree with a statement and feel that it is true about you, fill in the space under T (true) on the answer sheet. If you disagree with a statement and feel that it is not true about you, fill in the space under F (false). Be sure to blacken in the complete space for each item.
  - C. Please write your name, school, grade, and sex in the answer sheet.
1. I enjoy doing things that challenge me. (nAch)<sup>a</sup>
  2. It is unrealistic for me to insist on becoming the best in my field of work all of the time. (nAch)
  3. I get disgusted with myself when I have not learned something properly. (nAch)
  4. I believe that a person who is incapable of enjoying the people around him misses much in life. (nAff)<sup>b</sup>
  5. When people are not going to see what I do, I often do less than my very best. (nAch)
  6. I pay little attention to the interests of people I know. (nAff)
  7. I will keep working on a problem after others have given up. (nAch)
  8. Trying to please people is a waste of time. (nAff)
  9. I have rarely done extra studying in connection with my work. (nAch)
  10. Loyalty to my friends is quite important to me. (nAff)
  11. I would rather do any easy job than one involving obstacles which must be overcome. (nAch)
- a Items from PRF Need for Achievement Scale are indicated by (nAch)
- b Items from PRF Need for Affiliation Scale are indicated by (nAff)

12. I am considered friendly. (nAff)
13. I often set goals which are difficult to reach. (nAch)
14. Most of my relationships with people are businesslike rather than friendly. (nAff)
15. I try to work just hard enough to get by. (nAch)
16. I enjoy being friendly. (nAff)
17. My goal is to do at least a little bit more than anyone else has done before. (nAch)
18. After I get to know most people, I decide that they would make poor friends. (nAff)
19. I work because I have to, and for that reason only. (nAch)
20. I try to be in the company of friends as much as possible. (nAff)
21. Self improvement means nothing to me unless it leads to immediate success. (nAch)
22. Usually I would rather go somewhere alone than go to a party. (nAff)
23. I really don't enjoy hard work. (nAch)
24. To love and be loved is of greatest importance to me. (nAff)
25. I prefer to be paid on the basis of how much work I have done rather than on how many hours I have worked. (nAch)
26. I have relatively few friends. (nAff)
27. People have always said that I am a hard worker. (nAch)
28. I seldom go out of my way to do something just to make others happy. (nAff)
29. I don't mind working while other people are having fun. (nAch)
30. Most people think I am warm-hearted and sociable. (nAff)
31. It doesn't really matter to me whether I become one of the best in my field. (nAch)
32. I enjoy myself at social functions. (nAff)
33. Sometimes people say I neglect other important aspects of life because I work so hard. (nAch)
34. When I see someone I know from a distance, I don't go out of my way to say "Hello". (nAff)

35. I am sure people think I don't have a great deal of drive. (nAch)
36. I spend a lot of time visiting friends. (nAff)
37. I enjoy work more than play. (nAch)
38. I want to remain unbothered by obligations to friends. (nAff)
39. I go out of my way to meet people. (nAff)
40. I am quite independent of the people I know. (nAff)

## EDUCATIONAL RESEARCH QUESTIONNAIRE

## PART III

## Neuroticism Scale Questionnaire

NAME			TODAY'S DATE
First	Middle	Last	
SEX	AGE	OTHER FACTS	
(Write F or M)			(Address, Occupation, etc., as Instructed)

This section questions about your attitudes and opinions--what you do and how you feel about certain situations. Some people feel one way; other people feel another way. Thus, there are no "right" or "wrong" answers to the questions.

For practice, start with the two simple examples just below. As you see, each one is in the form of a sentence. By putting a cross, X, in ONE of the three boxes on the right you show how it applies to you. Make your X now on the two examples.

- |                                    | Yes                      | In Between               | No                       |
|------------------------------------|--------------------------|--------------------------|--------------------------|
| 1. I like to go swimming . . . . . | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

A middle box is provided for the times when you cannot definitely say Yes or No. But use this middle box as little as possible.

2. I would rather spend an evening:  
(A) Talking to people. (C) At a movie.
- | A | Undecided | C |
|---|-----------|---|
|   |           |   |

About half the sentences inside end in A and C choices like this. A is always to the left and C is always to the right. Remember, use the middle "In-Between" or "Undecided" box only if you cannot possibly decide between A or C.

NOW =

1. Make sure you have put your name and whatever else is asked for at the top of this page.
2. Never pass over a question, but give some answer to every single one. Your answers will be entirely confidential, so answer truthfully.

3. Do not spend time puzzling things out. Answer each question immediately, the way you want to at this moment ( not last week, or usually). You may have answered questions like this before, but answer them as you feel NOW.

Most people finish in five to ten minutes.

ANSWER ONLY IN BOXES TO THE RIGHT.  
MARK ONLY ONE BOX FOR EACH QUESTION.

★  
PUT ANSWERS BELOW

Do not  
write  
in this  
column

- |  | A   | B          | C  |
|--|-----|------------|----|
| 1. In school, what I liked best was:   |     |            |    |
| (A) English.   |     | Undecided  |    |
| (C) Arithmetic or Mathematics.   |     |            |    |
| 2. Every now and then, I really like to engage in a tough physical activity.                             | Yes | In-Between | No |
| 3. I strongly enjoy the slap-stick humor of the usual television comedy show.                            |     |            |    |
| 4. I would rather read:  |     |            |    |
| (A) A realistic description of military battles.   | A   | Undecided  | C  |
| (C) An imaginative and sensitive novel.  |     |            |    |
| 5. If somebody interrupts me when I'm talking, I forget what I'm talking about.                          |     |            |    |
| (A) Yes, often. (B) Sometimes. (C) Hardly ever.  |     |            |    |
| 6. I enjoy more an evening:  |     |            |    |
| (A) At a lively party with friends.  | A   | Undecided  | C  |
| (C) With a good hobby of my own.   |     |            |    |
| 7. I prefer to dress:  |     |            |    |
| (A) Very quietly, correctly, and conservatively.   |     |            |    |
| (B) In an average way.   | A   | B          | C  |
| (C) With some definite style that people can see.  |     |            |    |
| 8. I like to go out to a show or entertainment:  |     |            |    |
| (A) Less than once a week (less than average).   |     |            |    |
| (B) About once a week (average).   | A   | B          | C  |
| (C) More than once a week (more than average).   |     |            |    |
| 9. I can tell a complete lie with a straight face:   |     |            |    |
| (A) Whenever it is right to do so.   |     |            |    |
| (B) With a little difficulty.  | A   | B          | C  |
| (C) Never under any circumstances.   |     |            |    |
| 10. I greatly like to play practical jokes.  | Yes | In-Between | No |
| 11. I like it when I know so well what the group has to do that I naturally become the one in command.   |     |            |    |
| 12. In my spare time, I would rather join:   |     |            |    |
| (A) A hiking and exploring club. (C) A community service organization.                                   |     |            |    |
| 13. I believe it is right to be modest and understate how good I am at something, when people ask.       | Yes | In-Between | No |
| 14. If I think a person is wrong in a discussion, I tell him so:   |     |            |    |
| (A) Only if it can be done politely. (B) Sometimes. (C) Almost always.                                   |     |            |    |
| 15. The use of dirty or foul language disgusts me (even if there are only people of my own sex present). | Yes | In-Between | No |
| 16. I find it upsetting to have to move all my belongings to a new place.                                | Yes | In-Between | No |
| 17. I would rather listen to:  |     |            |    |
| (A) A brass band. (C) A good church choir.   |     |            |    |
| 18. When annoyed, I may say things that hurt people's feelings:  |     |            |    |
| (A) Never. (B) Rarely. (C) Sometimes.  |     |            |    |
| 19. I often feel quite tired when I get up in the morning.   | Yes | In-Between | No |
| 20. I need to have things "just so," in order to concentrate on my work.                                 | Yes | In-Between | No |

I

F

E

An

21. I would rather be:  
 (A) A guidance worker with young people seeking careers. ☐ A ☐ Undecided ☐ O  
 (C) A manager in a technical manufacturing company. ☐ ☐ ☐
22. In school, what I liked best was:  
 (A) Handwork and crafts. (B) Each about the same. (C) Music. ☐ A ☐ B ☐ C
23. I would rather spend my vacations:  
 (A) In places in my own country, where I know I'll have a good time. ☐ A ☐ Undecided ☐ O  
 (C) In foreign lands that are colorful and "different." ☐ ☐ ☐
24. The newspaper headline that would interest me more is:  
 (A) Latest Improvements in Production and Marketing. ☐ A ☐ Undecided ☐ O  
 (C) Religious Leaders Discuss a Unified Religion. ☐ ☐ ☐
25. I think I am more sensitive than most people to the artistic quality of my surroundings. ☐ Yes ☐ In-Between ☐ No
26. I have a tendency to be:  
 (A) A rather reckless optimist (too sure things will go well). ☐ A ☐ Undecided ☐ O  
 (C) An overcautious pessimist (too sure things will go wrong). ☐ ☐ ☐
27. I have a hard time putting work out of my mind and relaxing. ☐ Yes ☐ In-Between ☐ No
28. I like to crack jokes and tell funny stories:  
 (A) Hardly ever. ☐ A ☐ B ☐ C  
 (B) Sometimes. ☐ ☐ ☐  
 (C) Often. ☐ ☐ ☐
29. I would rather be:  
 (A) An actor. ☐ A ☐ Undecided ☐ O  
 (C) A house builder. ☐ ☐ ☐
30. I enjoy acting on impulses of the moment (even if they do sometimes land me in a few difficulties later). ☐ Yes ☐ In-Between ☐ No
31. I feel it is more important to:  
 (A) Get my own ideas put into practice. (C) Get along smoothly with others. ☐ A ☐ Undecided ☐ O
32. When I need immediately the use of something belonging to a friend, but he is out, I think it's all right to borrow it without his permission. ☐ Yes ☐ In-Between ☐ No
33. It is more important to me:  
 (A) To enjoy my life quietly in my own way. ☐ A ☐ Undecided ☐ O  
 (C) To be admired and respected for what I have done. ☐ ☐ ☐
34. If I had a loaded gun in my hand, I would feel nervous until it was unloaded. ☐ Yes ☐ In-Between ☐ No
35. I never try to ask help of people I know only slightly. ☐ True ☐ In-Between ☐ False
36. Sometimes I let small things get on my nerves too much. ☐ Yes ☐ In-Between ☐ No
37. Worrying keeps me awake at night. ☐ Never ☐ Sometimes ☐ Often
38. I feel well-adjusted to life and its demands:  
 (A) All of the time. (B) Most of the time. (C) Less than half the time. ☐ A ☐ B ☐ C
39. I feel that people are not as considerate of me as my good intentions deserve. ☐ True ☐ In-Between ☐ False
40. I sometimes get tense and upset as I think back on the day's happenings. ☐ Yes ☐ In-Between ☐ No

STOP HERE. MAKE SURE YOU HAVE ANSWERED EVERY QUESTION.

## EDUCATIONAL RESEARCH QUESTIONNAIRE

## PART IV

## Social Inadequacy and Personal Adjustment Scales

NAME \_\_\_\_\_

Here are some sentences that will give you an opportunity to express how you feel about certain personal concerns and problems. Your answers to these will be treated with the strictest confidence, so please be free to say exactly how you feel.

Some statements will not be true in your case or will not apply to you in any way. Others will be true, but will vary in how strongly you feel about them.

You will mark your answers on the answer sheet labelled University of Windsor.... Make no marks on this booklet. Read each statement and decide how you feel about it. Then mark your answer in the space provided on your answer sheet.

If you feel the statement is either false or does not apply to you, blacken the space under "A".

A	B	C	D	E
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you feel the statement is generally true but of no concern to you, blacken the space under "B".

A	B	C	D	E
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you feel the statement is true but of little concern to you, blacken the space under "C".

A	B	C	D	E
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you feel the statement is generally true but of much concern to you, blacken the space under "D".

A	B	C	D	E
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If you feel the statement is generally true and of greatest concern to you, blacken the space under "E".

A	B	C	D	E
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



1. I am always afraid in a crowd.<sup>1</sup>
2. I'm afraid people will laugh at me because I'm not sure I know how to act.
3. I don't feel sure how to act on dates.
4. I often feel uncomfortable when I'm around others my age.
5. I feel ill at ease at parties.
6. I have trouble making friends easily.
7. I avoid meeting the parents of my dates.
8. I am often unable to look at people when I'm talking to them.
9. I can't carry on a conversation in a group.
10. I am never sure what I ought to wear to be dressed right for the occasion.
11. I never feel I know what clothes make me look best.
12. Often it seems that I hurt people's feelings without meaning to do so.
13. I would like to get married as soon as possible.<sup>2</sup>
14. I work hard but never get anything done.
15. I don't sleep well.
16. I can't seem to make other people understand I really like them.
17. I can never figure out what grownups want me to do.
18. People sometimes tell me I am a snob.
19. I feel tired all the time.
20. I'm never chosen by teacher to do any special task.
21. I get mad and do things I shouldn't when I can't have my way.
22. I never seem to be able to get anywhere on time.
23. Sometimes I feel things are not real.

1 Items 1-12 from Social Inadequacy Scale

2 Items 13-38 from Personal Adjustment Scale

24. Others always look better than I.
25. My going steady presents real problem in petting.
26. I wonder if for my age I am normal in physical development.
27. I'm often asked to drop out to let someone else have my place.
28. People gossip about me behind my back.
29. It's hard for me to live up to the reputation of others in the family.
30. I don't seem to live up to my religious teaching as well as others do.
31. Sometimes I feel I have been very wicked.
32. I think about sex a good deal of the time.
33. Sometimes criticism gets me down.
34. I am prejudiced against some people.
35. I'm teased a lot by other boys and girls.
36. Being out with people who get drunk scares me.
37. I have trouble getting a job after school.
38. I see boys and girls at school whom I'd like to meet but I never get a chance.

THIS IS THE END OF PART IV

## APPENDIX B

## RAW DATA BY EXPERIMENTAL CONDITION

## High nAch, High nAff

Subject	nAch	nAff	IQ	Father's Occupation	Father's Education	Mother's Education	GPA	Hours per day studying	Hours per day with friends	Anxiety	Neuroticism	Personal Adjustment	Social Inadequacy
1	12	18	99	20	1	1	59	01	00	14	52	18	12
2	12	18	124	35	1	0	78	01	03	11	30	14	05
3	15	18	110	73	6	4	73	02	03	14	48	17	04
4	11	18	98	35	2	2	65	02	01	-	-	12	09
5	11	19	103	35	1	3	58	01	05	9	44	11	06
6	12	18	85	-	3	2	63	01	01	11	39	08	00
7	13	20	80	45	3	3	50	01	03	07	36	15	07
8	13	19	98	27	3	5	69	01	01	13	49	16	13
9	13	19	119	30	3	4	69	02	01	13	53	17	05
10	13	18	94	30	2	3	63	02	01	06	38	17	12
11	17	19	86	34	1	-	54	02	01	12	51	21	06
12	12	20	124	65	3	6	64	01	01	10	46	10	15
13	11	19	101	-	-	2	66	01	02	15	51	10	05
14	16	18	90	27	1	1	64	02	03	14	56	09	05
15	12	19	96	35	2	1	75	02	03	11	47	04	10
16	14	20	105	-	3	4	76	02	02	08	43	14	01
17	12	18	115	70	6	5	58	01	03	15	49	21	10
18	11	18	122	27	-	4	66	02	05	10	42	23	11
19	11	18	97	35	2	2	52	01	02	15	55	27	14
20	11	18	93	27	-	-	64	02	01	11	51	07	09
21	16	20	94	35	-	-	61	02	01	12	44	17	11
22	11	20	101	35	3	1	62	01	01	08	36	07	02
23	11	20	124	60	-	-	73	01	01	03	36	12	03
24	12	18	93	35	1	1	65	02	03	13	39	21	09
25	14	18	107	27	3	2	73	03	03	13	42	08	00
26	13	18	105	39	3	3	69	00	01	20	65	07	10
27	11	18	107	-	5	3	71	02	05	10	38	17	07

## High nAch, High nAff

Subject				Father's	Father's	Mother's		Hours	Hours per		Neu-	Personal	Social
Males	nAch	nAff	IQ	Occu- pation	Edu- cation	Edu- cation	GPA	per day studying	day with friends	Anx- iety	roti- cism	Adjust- ment	Inade- quacy
1	13	17	106	70	2	4	74	01	05	10	29	14	04
2	15	17	107	35	3	3	66	00	01	09	33	22	12
3	17	17	124	66	2	2	73	01	06	12	37	18	08
4	11	17	95	66	-	-	61	00	06	17	39	04	00
5	12	16	105	27	-	-	64	02	05	15	41	27	10
6	11	17	99	27	2	4	50	00	01	09	27	05	01
7	12	18	102	35	3	1	55	00	08	10	26	10	01
8	13	17	94	-	-	3							
9	14	17	109	37	3	5	56	00	05	05	28	13	02
10	12	16	110	55	4	4	54	00	05	11	35	10	00
11	13	18	102	28	4	4	56	02	03	14	41	13	08
12	13	19	107	35	-	2	54	01	05	14	34	20	03
13	13	18	107	45	2	3	64	01	07	12	39	14	06
14	11	19	98	29	2	2	61	01	02	14	37	10	05
15	16	17	98	39	-	-	66	01	02	08	22	21	03
16	14	16	101	29	3	3	63	00	02	11	35	14	05
17	11	19	99	27	2	4	61	01	03	11	31	05	05
18	12	19	116	31	1	2	63	01	02	07	37	24	11
19	14	18	106	35	4	4	78	01	02	10	40	15	10
20	11	16	95	27	1	1	63	01	04	13	41	22	08
21	14	19	87	55	4	4	65	02	05	11	35	04	03
22	15	17	84	70	6	3	59	01	06	-	-	04	03
23	13	17	126	50	5	5	58	03	01	11	57	16	14
24	13	16	93	27	4	4	76	00	05	10	39	13	03
							51	02	06	09	39	12	06

## High nAch, Low nAff

Subject	nAch	nAff	LQ	Father's Occu- pation	Father's Edu- cation	Mother's Edu- cation	GPA	Hours per day studying	Hours per day with friends	Anx- iety	Neu- roti- cism	Personal Adjust- ment	Social Inade- quacy
1	11	15	86	51	-	-	45	00	08	16	50	20	08
2	16	15	97	40	2	-	63	03	06	09	36	15	02
3	12	08	102	27	2	3	66	02	00	18	54	29	17
4	14	10	103	35	5	3	62	02	01	18	54	29	19
5	12	16	86	35	-	-	67	01	01	10	36	17	02
6	15	14	94	34	1	3	65	02	01	11	44	08	02
7	15	16	93	39	2	2	64	01	02	14	52	04	01
8	14	10	106	29	1	5	71	01	01	13	48	20	07
9	16	17	93	39	2	3	65	03	04	09	47	10	02
10	16	08	108	35	1	1	72	02	01	08	48	11	10
11	11	17	109	45	2	3	78	03	02	16	53	14	16
12	13	15	128	-	6	6	76	02	03	13	38	14	05
13	18	12	117	60	5	6	79	02	01	17	62	17	18
14	12	16	107	45	2	-	78	02	01	10	37	04	03
15	12	17	96	27	-	-	69	02	01	10	43	16	04
16	16	15	93	27	-	-	63	02	00	10	52	21	11
17	14	17	106	49	2	4	65	01	02	13	39	17	14
18	15	15	97	-	1	1	65	02	03	12	40	11	05
19	11	16	93	27	1	2	56	03	02	13	46	24	09
20	14	17	137	35	1	2	73	03	02	12	50	29	10
21	11	15	115	27	1	1	74	02	00	10	35	22	15
22	11	17	108	35	4	3	62	01	01	12	42	06	06
23	14	17	115	35	2	3	79	01	01	14	43	05	08
24	14	16	102	27	3	2	78	01	03	06	29	02	05
25	17	17	93	45	3	4	61	01	01	09	29	06	03
26	13	17	104	27	3	2	81	00	02	12	40	02	04
27	16	17	100	27	2	2	71	03	03	03	35	09	02
28	16	17	79	27	2	2	69	03	02	07	44	21	04
29	11	16	104	55	4	3	68	00	03	18	46	19	10
30	12	14	111	37	5	4	76	01	02	15	48	20	12
31	13	16	115	72	6	6	64	01	-	11	44	21	07
32	14	12	114	71	6	6	74	02	06	14	49	-	13

## High nAch, Low nAff

Subject	nAch	nAff	IQ	Father's Occupation	Father's Education	Mother's Education	GPA	Hours per day studying	Hours per day with friends	Anx- iety	Neu- rotic- ism	Personal Adjust- ment	Social Inade- quacy
Females													
33	14	13	76	29	1	1	56	03	01	18	50	--	--
34	12	16	93	49	2	2	59	01	02	17	51	27	10
35	17	16	90	58	5	4	64	01	04	06	40	11	06
36	13	15	114	70	6	4	81	03	04	12	45	07	03
37	13	13	130	28	2	3	74	01	03	07	34	08	02
38	15	17	129	28	3	6	83	01	06	14	43	07	04
39	15	17	122	45	6	3	78	02	03	12	33	15	01

## Males

1	13	15	116	45	3	3	68	01	03	10	34	08	03
2	12	14	94	27	5	3	52	01	02	14	43	25	13
3	13	12	86	45	2	1	56	02	01	11	38	15	13
4	13	14	93	33	1	-	72	01	03	13	31	18	09
5	13	08	112	58	2	3	75	02	01	06	33	03	03
6	13	15	124	27	4	4	64	01	03	09	26	18	07
7	11	15	102	55	3	3	65	00	03	10	42	21	10
8	13	15	118	27	5	3	68	00	05	10	31	31	13
9	12	12	107	29	5	4	73	-	01	04	32	06	06
10	11	08	88	45	1	1	69	02	06	10	44	13	08
11	13	11	112	28	1	2	60	01	05	14	37	28	20
12	11	10	108	70	2	3	66	01	02	13	35	15	06
13	15	15	127	30	6	3	81	00	01	--	--	20	18
14	11	14	123	35	3	3	81	00	01	13	44	06	02
15	12	07	103	34	3	-	66	01	02	14	42	13	04
16	14	11	87	43	3	2	56	01	01	13	39	14	12
17	14	13	85	29	-	2	66	03	02	12	35	13	01
18	11	15	98		-	1	69	01	04	13	39	22	08

## Low nAch, High nAch

Subject	nAch	nAff	IQ	Father's occu- pation	Father's Edu- cation	Mother's Edu- cation	GPA	Hours per day studying	Hours per day with friends	Anx- iety	Neu- roti- cism	Personal Adjust- ment	Social Inade- quacy
1	10	20	98	35	1	-	56	01	04	14	42	15	14
2	06	19	86	27	1	-	56	01	04	14	50	20	06
3	09	19	101	35	3	3	57	01	08	13	40	24	04
4	10	19	100	40	4	3	66	03	05	11	37	14	05
5	07	18	96	27	-	3	53	01	02	17	60	25	08
6	06	18	105	51	4	4	56	00	09	02	24	08	00
7	06	18	107	34	3	3	63	01	07	09	46	10	17
8	05	18	95	35	2	2	53	01	05	15	51	11	06
9	10	18	101	35	3	1	66	01	03	13	47	20	08
10	10	19	127	58	3	6	74	00	03	13	44	17	10
11	10	20	112	60	3	3	66	01	04	12	36	23	06
12	09	18	80	39	4	3	48	01	12	14	53	14	05
13	10	19	108	27	2	3	58	01	03	17	50	22	11
14	10	18	117	31	1	2	63	02	04	12	46	10	03
15	10	18	97	34	2	2	54	02	04	15	38	16	10
16	10	19	86	29	-	-	56	01	03	08	44	03	06
17	04	18	105	35	-	2	58	01	02	16	46	13	04
18	06	18	114	27	3	5	61	01	02	12	44	10	04
19	08	18	113	27	4	-	56	01	06	13	37	12	04
20	08	18	103	27	2	4	53	02	05	13	44	21	08
21	07	19	99	46	4	3	62	01	06	14	48	13	02
22	06	19	112	31	2	3	65	01	06	15	35	13	01
23	07	19	103	29	-	2	56	00	08	07	46	13	09
24	10	19	91	35	3	4	75	01	02	12	47	06	06



## Low nAch, High nAff

Subject	Male	nAch	nAff	IQ	Father's Occupation	Father's Education	Mother's Education	GPA	Hours per day studying	Hours per day with friends	Anxiety	Neuroticism	Personal Adjustment	Social Inadequacy
1		10	16	126	55	4	3	62	00	02	16	30	15	08
2		08	16	83	28	1	1	61	02	02	12	45	10	07
3		09	18	92	72	6	3	58	01	01	14	38	26	02
4		09	20	98	29	1	1	67	01	03	09	38	16	01
5		07	16	96	29	-	3	60	01	05	12	42	14	07
6		08	18	100	28	3	4	65	01	07	08	32	06	02
7		06	16	97	30	2	3	54	00	03	14	40	20	04
8		08	18	91	27	2	3	58	01	03	13	32	12	04
9		10	17	99	27	-	-	50	01	04	10	29	17	07
10		10	16	104	-	-	-	69	00	02	12	33	06	03
11		09	18	88	-	2	2	51	03	01	14	47	02	09
12		10	19	107	35	2	4	64	03	01	17	31	29	13
13		07	17	112	55	3	4	71	00	03	10	35	10	03
14		08	16	106	39	-	4	49	01	01	17	46	28	11
15		10	16	94	44	-	4	49	01	04	11	39	05	07
16		02	17	82	29	2	4	43	01	05	15	47	27	06
17		10	18	128	44	1	3	74	01	03	09	28	12	03
18		07	16	114	35	1	1	80	03	04	16	44	22	04

## Low nAch, Low nAff

Subjects	nAch	nAff	IQ	Father's Occupation	Father's Education	Mother's Education	GPA	Hours per day studying	Hours per day with friends	Anx- iety	Neu- rotic- ism	Personal Adjust- ment	Social Inade- quacy
1	08	06	89	35	1	1	59	01	00	14	51	15	07
2	10	17	94	27	3	3	48	02	04	14	44	26	08
3	07	16	116	--	--	--	63	00	01	10	36	17	06
4	09	15	108	27	1	1	73	01	02	14	57	12	14
5	05	17	112	--	3	4	58	01	02	08	38	08	12
6	08	15	104	60	4	3	59	01	05	13	48	27	14
7	10	14	99	70	--	--	55	01	00	17	59	29	18
8	06	12	115	42	--	--	64	01	01	--	--	06	03
9	10	17	101	34	2	2	53	02	04	--	--	18	08
10	04	13	88	35	3	3	68	03	02	16	47	23	19
11	03	15	91	27	2	2	63	01	07	12	38	24	10
12	08	14	95	43	--	3	54	01	07	11	42	09	00
13	06	17	100	40	3	3	65	00	07	11	46	16	01
14	10	16	98	29	2	6	63	01	03	13	44	22	09
15	10	16	98	40	1	1	60	02	06	15	44	13	04
16	10	16	118	29	3	3	67	01	01	05	36	02	01
17	05	16	98	55	4	4	39	01	03	15	52	23	02
18	08	15	100	27	--	--	76	01	03	06	44	09	10
19	09	13	104	25	2	2	69	01	03	16	53	20	17
20	08	17	98	27	2	2	64	01	02	12	37	14	11
21	08	15	107	29	3	3	64	01	02	10	53	12	11
22	09	17	96	--	6	3	58	00	02	14	52	18	08
23	09	17	104	44	--	3	65	01	03	13	44	29	14
24	10	15	104	27	--	3	70	01	03	15	45	21	03
25	07	11	107	60	--	4	66	01	02	18	41	36	15
26	05	13	77	33	1	4	55	02	04	13	51	19	07
27	05	15	91	32	1	1	63	01	10	15	45	22	06

## Low nAch, Low nAff

## Subject

Males	nAch	nAff	IQ	Father's Occu- pation	Father's Edu- cation	Mother's Edu- cation	GPA	Hours per day studying	Hours per day with friends	Anx- iety	Neu- roti- cism	Personal Adjust- ment	Social Inade- quacy
1	08	12	103	27	4	4	56	01	02	15	42	18	09
2	10	15	109	42	3	3	70	01	01	17	48	19	13
3	07	15	100	35	1	2	59	01	05	14	35	08	08
4	05	15	113	32	2	2	58	01	05	15	38	12	04
5	08	15	106	---	5	2	50	00	05	10	39	09	09
6	10	16	126	55	4	3	59	01	02	13	38	17	04
7	09	13	95	29	2	-	53	01	04	09	24	09	08
8	07	15	103	42	-	-	48	01	01	14	48	15	05
9	05	04	115	63	4	4	58	00	05	11	35	08	11
10	06	13	104	31	3	4	60	02	01	11	38	18	14
11	10	14	113	35	1	1	63	00	04	12	32	24	14
12	05	11	113	35	-	-	59	01	02	10	27	11	06
13	10	14	115	35	6	-	61	01	04	11	36	17	10
14	10	10	94	35	1	2	56	01	02	11	32	13	12
15	09	15	101	52	5	5	56	00	02	13	37	27	14

# APPENDIX C

## Pearson Product-Moment Correlations Between Dependent Variables and Potential Covariates

Potential Covariates	Group	GPA	Hours per day studying	Hours per day with friends	Anxiety	Neuroticism	Personal Adjustment	Social Inadequacy
IQ	Combined	.34****	-.21****	-.07	-.03	-.14**	.11**	.13***
	Female	.52****	-.08	-.17**	-.08	-.15*	.02	.08
	Male	.22**	-.38****	-.02	-.07	-.09	.24****	.21**
Father's Occupation	Combined	.04	-.04	.03	.07	-.02	.19****	.15***
	Female	-.01	-.05	.05	.09	.06	.18***	.15*
	Male	.10	-.01	.002	.03	-.11	.20**	.16
Father's Education	Combined	.09	-.07	-.004	-.01	-.05	.04	.04
	Female	.14***	.01	.07	.08	.02	-.07	-.02
	Male	.01	-.13	-.09	-.16	-.11	.10	.14
Mother's Education	Combined	.02	-.11*	-.07	.04	.03	.10**	.10**
	Female	.15**	-.07	-.03	.14*	.11	.10	.14*
	Male	-.11	-.17*	-.20**	-.16	-.04	.10	.03

\* p < .15  
\*\* p < .10  
\*\*\* p < .05  
\*\*\*\* p < .01

# APPENDIX D

## Mean Scores on IQ, Father Occupation, Father Education and Mother Education

Condition		Father's Occupation	Father's Education	Mother's Education	IQ <sup>b</sup>
High nAch, High nAff	Combined	39.4	2.8	3.0	102.7
	Male	38.3 (24) <sup>a</sup>	2.6 (20)	2.7 (22)	102.6
	Female	40.5 (33)	3.0 (22)	3.3 (23)	102.8
High nAch, Low nAff	Combined	37.6	2.9	2.8	103.1
	Male	39.8 (18)	2.9 (17)	3.2 (17)	104.2
	Female	35.3 (27)	2.9 (35)	2.4 (33)	102.0
Low nAch, High nAff	Combined	36.7	2.5	3.0	101.6
	Male	35.5 (16)	2.7 (13)	3.1 (16)	102.3
	Female	37.9 (24)	2.3 (20)	2.9 (20)	100.9
Low nAch, Low nAff	Combined	37.9	2.8	2.8	103.1
	Male	37.5 (14)	2.5 (14)	2.8 (12)	100.1
	Female	38.3 (24)	3.2 (19)	2.9 (22)	105.8

<sup>a</sup> Parenthesized numbers indicate the number of subjects for whom information was obtained.

# APPENDIX E

## Summary of Analyses of Variance on IQ, Father's Occupation, Mother's Education and Father's Education

Source	IQ			Father's Occupation <sup>a</sup>			Father's Education <sup>b</sup>			Mother's Education <sup>c</sup>		
	df	MS	F	df	MS	F	df	MS	F	df	MS	F
Sex (A)	1	151.83	1.06	1	84.16	.50	1	1.39	.64	1	.15	.09
Age (B)	1	35.51	.25	1	110.76	.66	1	2.35	1.09	1	.05	.03
Age (C)	1	372.13	2.50	1	404.34	2.42	1	2.22	1.03	1	.28	.16
A X B	1	59.52	.42	1	35.62	.21	1	.15	.07	1	.002	.001
B X C	1	405.54	2.84*	1	77.53	.46	1	1.78	.83	1	1.38	.80
A X C	1	57.72	.38	1	.08	.001	1	1.34	.62	1	.02	.009
A X B X C	1	370.61	2.59	1	3.64	.02	1	7.21	3.35*	1	5.03	2.90*
Within Cell	187	142.91		172	167.22		152	2.15		157	1.74	

\*  $p < .10$

\*\*  $p < .05$

<sup>a</sup> Data on father's occupation were not obtained for 15 subjects

<sup>b</sup> Data on father's education were not obtained from 35 subjects

<sup>c</sup> Data on mother's education were not obtained from 30 subjects

# APPENDIX F

Mean Scores On IQ, Father's Occupation, Father's Education and Mother's Education after the Deletion of Data from four Subjects

Condition		Father's Occupation	Father's Education	Mother's Education	IQ
	Combined	39.4	2.8	3.0	102.7
High nAch, High nAff	Males	40.5	3.2	3.3	102.8
	Females	38.3	2.5	2.7	102.5
	Combined	37.5	2.9	2.8	103.1
High nAch Low nAff	Males	35.3	2.3	2.4	102.0
	Females	39.8	2.7	3.2	104.2
	Combined	36.7	2.8	3.0	101.6
Low nAch High nAff	Males	37.9	2.7	2.9	100.9
	Females	35.5	2.9	3.1	102.3
	Combined	37.8	2.9	2.8	103.1
Low nAch Low nAff	Males	38.3	3.0	2.9	105.8
	Females	37.5	2.6	2.8	100.4

# APPENDIX G

Summary of Analyses of Variance on IQ, Father's Occupation, Father's Education, and Mother's Education After the Deletion of Data from Four Subjects

Source	IQ			Father's Occupation			Father's Education			Mother's Education		
	df	MS	F	df	MS	F	df	MS	F	df	MS	F
Sex (A)	1	10.74	.08	1	3.20	.02	1	.61	.28	1	.03	.02
nAch (B)	1	12.52	.09	1	55.21	.34	1	1.09	.50	1	.01	.003
nAff (C)	1	38.72	.29	1	3.00	.02	1	1.03	.48	1	1.14	.66
A X B	1	96.70	.73	1	75.60	.47	1	.01	.003	1	.05	.03
B X C	1	49.72	.37	1	86.85	.54	1	.75	.34	1	2.89	1.65
A X C	1	12.84	.10	1	177.86	1.10	1	.69	.32	1	.02	.01
A X B X C	1	232.33	1.74	1	137.89	.86	1	5.42	2.50	1	6.01	3.44*
Within Cell	183	133.27		168	161.00		148	2.17		153	1.75	

\* p .10



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